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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.
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09/528,296 03/17/00 TAKADA K 000294

023850 MM91/1018
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EXAMINER

NADAV, O

ART UNIT

PAPER NUMBER

2811

DATE MAILED:

10/18/01

Please find below and/or attached an Office communication concerning this application or proceeding.

Commissioner of Patents and Trademarks

Office Action Summary

Application No.
09/528,296

Applicant
Takada

Examiner
ORI NADAV

Art Unit
2811

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136 (a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on Sep 10, 2001
- 2a) ☒ This action is FINAL. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11; 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-12 is/are pending in the application.
- 4a) Of the above, claim(s) 8-12 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-7 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claims _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are objected to by the Examiner.
- 11) ☒ The proposed drawing correction filed on Sep 10, 2001 is: a) ☒ approved b) ☐ disapproved.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. § 119

- 13) ☐ Acknowledgement is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d).
- a) ☐ All b) ☐ Some* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- *See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. § 119(e).

Attachment(s)

- 15) ☐ Notice of References Cited (PTO-892)
- 16) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 17) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s). _____
- 18) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 19) ☐ Notice of Informal Patent Application (PTO-152)
- 20) ☐ Other: _____

Art Unit: 2811

DETAILED ACTION

Drawings

1. The proposed drawing correction and/or the proposed substitute sheets of drawings, filed on 9/10/2001 have been approved by the examiner.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which the subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 1-6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Seshan et al. (6,163,065) in view Admitted Prior Art (APA).

Seshan et al. teach in figure 5 substantially the entire claimed structure, including semiconductor device comprising a substrate, and a multi layer planarized interconnection structure M1-M5 formed on the substrate including first and second ILD film (column 4, lines 21-31) and a guard ring 504 having a straight line form and a zig-zag pattern in one of a triangular and rectangular wave patterns parallel to the substrate embedded in the ILD film continuously along a periphery of the substrate,

Art Unit: 2811

and including a conductive wall of a zig-zag pattern corresponding to the guard ring pattern in the ILD film, and a conductive pattern of a zig-zag pattern making contact with a top part of the conductive wall and having a principal surface coincident to the top surface of the of ILD film.

Seshan et al. do not teach a guard ring having two ILD films.

APA teaches in figure 2 a guard ring 12 parallel to the substrate and embedded in first and second ILD films 24, 25 along a periphery of the substrate, including conductive walls 25C in each ILD film from a bottom principal surface to a top principal surface thereof, and a conductive pattern 25a making contact with a top part of the conductive wall and having a principal surface coincident to the top surface of the of ILD film.

It would have been obvious to a person of ordinary skill in the art at the time the invention was made to use a guard ring comprising two ILD films in Seshan et al.'s device in order to provide better protection to the device, by a conventional method, of which official notice may be taken.

Regarding the processing limitations of a multi layer interconnection planarized by using CMP process, these would not carry patentable weight in this claim drawn to a structure, because distinct structure is not necessarily produced. In re Thorpe, 227 USPQ 964 (Fed. Cir. 1985).

Art Unit: 2811

Regarding claim 5, APA teaches conductive wall and the conductive pattern comprising Cu (page 4).

Regarding claim 6, APA teaches in figure 2 first and second ILD films supporting the conductive wall and the conductive pattern, laterally.

4. Claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over Seshan et al. and Admitted Prior Art (APA), as applied to claim 6 above, and further in view of Japanese Patent #10-335456.

Seshan et al. and APA teach substantially the entire claimed structure, as applied to claim 6 above, except an etch stop layer interposed between the first and second ILD films.

Japanese Patent #10-335456 in figure 7 an etch stop layer 54 interposed between the first and second ILD films 52, 58 (abstract).

It would have been obvious to a person of ordinary skill in the art at the time the invention was made to use an etch stop layer interposed between the first and second ILD films in the device of Seshan et al. and APA, in order to simplify and improve the processing steps of making the device. Note that it is conventional to form multi layer metalization using an etch stop layer, of which official notice may be taken.

Art Unit: 2811

Conclusion

5. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

Papers related to this application may be submitted to Technology center (TC) 2800 by facsimile transmission. Papers should be faxed to TC 2800 via the TC 2800 Fax center located in Crystal Plaza 4, room 4-C23. The faxing of such papers must conform with the notice published in the Official Gazette, 1096 OG

Art Unit: 2811

30 (November 15, 1989). The Group 2811 Fax Center number is (703) 308-7722 and 308-7724. The Group 2811 Fax Center is to be used only for papers related to Group 2811 applications.

Any inquiry concerning this communication or any earlier communication from the Examiner should be directed to *Examiner Nadav* whose telephone number is **(703) 308-8138**. The Examiner is in the Office generally between the hours of 7 AM to 3 PM (Eastern Standard Time) Monday through Friday. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Tom Thomas, can be reached at **(703) 308-2772**.

Any inquiry of a general nature or relating to the status of this application should be directed to the **Technology Center Receptionists** whose telephone number is **308-0956**


**TOM THOMAS
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2800**

Ori Nadav

October 9, 2001